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# *Dendrothele latenavicularis* sp. nov. (*Agaricales, Basidiomycota*) from the Patagonian Andes

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Abstract — *Dendrothele latenavicularis* is described as a new species from the Patagonian Andes forest. It is closely related to other species of *Dendrothele* with navicular or arachiform basidiospores —*D. arachispora, D. cymbiformis D. navicularis, D. magnenavicularis*, and *D. pitrae*— but with distinctly broader basidiospores. A key to the previous species is included.

Key words — corticioid fungi, Patagonia, *Saxegothaea conspicua*, taxonomy

## Introduction

The genus *Dendrothele* Höhn. & Litsch. comprises about 45 species (Parmasto et al. 2004), most described and exclusively recorded from the Northern Hemisphere. *Dendrothele* includes species with discoid or crustose basidiomes occurring on bark of living trees and shrubs, with only few species known from fallen wood. Microscopically, it is characterized by the abundant dendrohyphidia and crystalline deposits, an adaptation to drought and exposure, large basidia, and variably shaped basidiospores, in some cases slightly thick-walled or cyanophilous. There are several worldwide taxonomic studies of the genus (e.g., Lemke 1964, Boidin et al. 1996), but only a few that focus on the Southern Hemisphere species (Cunningham 1954, 1963; Greslebin & Rajchenberg 1998; Nakasone & Burdsall 2011).

*Dendrothele* is a polyphyletic genus (Goranova et al. 2003, Bodensteiner et al. 2004, Binder et al. 2005, Larsson 2007), and the generic type, *Dendrothele papillosa* Höhn. & Litsch. [= *D. griseocana* (Bres.) Bourdot & Galzin], is included in the *Lachnellaceae* Boud. (*Niaceae* Jülich) within the *Agaricales* Underw., closely related to such cyphelloid genera as *Lachnella* Fr. and *Cyphellopsis* Donk. Recently, Nakasone & Burdsall (2011) described the first navicular

basidiospores in *Dendrothele* for some species from New Zealand. Some genera of cyphelloid fungi, such as *Flagelloscypha* Donk and *Lachnella*, have navicular basidiospores, which morphologically support their phylogenetic relationship with *Dendrothele*.

As a result of some collecting trips in the Valdivian rainforest we have found growing on bark of living *Saxegothaea conspicua* Lindl. (*Podocarpaceae*), a *Dendrothele* species with broad navicular basidiospores, different from previously described species, that is herein proposed as new.

## Material & methods

For light microscopic studies, samples were mounted in 3% potassium hydroxide (KOH), Melzer's reagent (IKI), and 0.1% cotton blue in 60% lactic acid to establish cyanophily of basidiospores. Line drawings were made with a camera lucida attachment. Specimens are deposited in the herbarium of the Centro de Investigación y Extensión Forestal Andino-Patagónico (Esquel, Argentina), BAFC, and SALA.

## Taxonomy

***Dendrothele latenavicularis*** Gorjón, **sp. nov.** PLATES 1–4

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*Basidiomata resupinata, effusa, crustacea, leve vel rimosa, subalbida. Systema hypharum monomiticum, hyphae fibulatae, crystallis perabundantibus. Dendrophyses copiosae, graciles, leves vel incrustates. Cystidia desunt. Basidia suburniformia vel subcylindracea, cum fibula basali, 4-sterigmatibus. Basidiosporae leves, late navicularis, tenuitunicatae, hyalinae, 16–21 × 8–11 µm, inamyloideae, indextrinoideae, forte cyanophileae. Differt Dendrothele naviculari, D. magnenaviculari et D. cymbiformi basidiosporis latioribus. Ad corticem arborum coniferarum viventes.*

TYPE: Argentina, Neuquén-Río Negro: Nahuel Huapi National Park, Puerto Blest (41°00′05″S 71°49′42″W), 800 m a.s.l., 30 May 2010–on bark of living *Saxegothaea conspicua*, leg. S.P.Gorjón, coll. SPG 2963. **Holotype**, BAFC; **isotypes**, SALA and herbarium of Centro de Investigación y Extensión Forestal Andino-Patagónico.

ETYMOLOGY: *latus* – Latin for broad, and *navicularis* – Latin for boat-shaped, referred to the shape of the basidiospores.

BASIDIOMATA annual, resupinate, adnate, at first orbicular, then coalescent and effused up to 3–5 cm, smooth, rimose when mature, at first whitish, turning yellowish cream with age, margin abrupt (PLATE 1). HYPHAL SYSTEM monomitic, generative hyphae with clamps, hyaline, thin-walled, straight or some tortuose, 1.5–2.5(–3) µm diam. DENDROHYPHIDIA variable, some with few branches and smooth, others richly ramified and covered by a crystalline encrustations, 1–1.5(–3) µm in diam, projecting above the basidia. CYSTIDIA absent. BASIDIA at first suburniform, cylindrical when mature, with a median constriction, thin-walled, (30–)35–45 × 10–14 µm, with 4 sterigmata, basally clamped. BASIDIOSPORES broadly navicular, tapering gradually to the vermiform distal

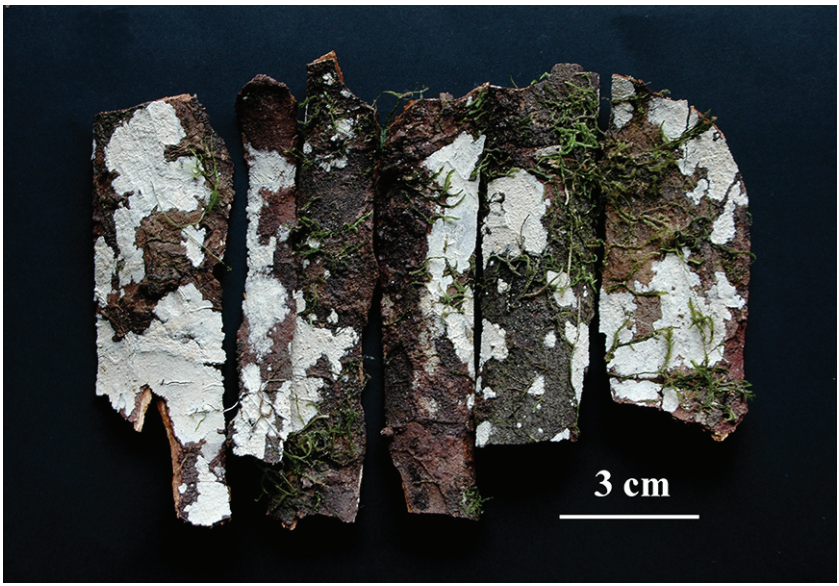


Plate 1. *Dendrothele latenavicularis*.
Basidiomes on bark (coll. S.P. Gorjón 2963, holotype)

end, with a blunt and round prominent apiculus, hyaline, smooth, thin-walled, mostly attached in groups of two or four, (16–)17–20(–21) × (8–)9–10(–11) µm, IKI–, with distinctly and strongly cyanophilic walls (plates 2–4).

Distribution and Ecology — *Dendrothele latenavicularis* is known only from the Patagonian Andes forests of Argentina (Valdivian rainforest). It grows on bark of living *Saxegothaea conspicua*, an endemic southern South American conifer, in mixed forests with *Nothofagus dombeyi* (Mirb.) Oerst., *Luma apiculata* (DC.) Burret, and *Chusquea culeou* E. Desv. If its occurrence coincides with host distribution, then it should be present in southern Chile also, although we have surveyed some areas in the closest regions (Region X and XI) with no success. In many specimens of *S. conspicua* where *D. latenavicularis* grows, it is also frequent to find associated to the bark *Globulicium hiemale* (Laurila) Hjortstam, easily to distinguish by the pinkish hymenial surface and the conspicuous white fibrillose to rhizomorphic margin.

Additional specimens examined — **ARGENTINA**. **Neuquén-Río Negro**: Nahuel Huapi National Park, Puerto Blest (41°00′05″S 71°49′42″W), 800 m a.s.l., 29-30 May 2010–on bark of living *Saxegothaea conspicua*, leg. S.P.Gorjón coll. SPG 2911, 2912, 2914, 2915, 2917, 2918, 2920, 2923, 2926, 2930, 2962. Idem, 12-14 April 2011, coll. *SPG 3215, 3242*. **Neuquén**: Lanin National Park, Lago Queni (40°08′35″S 71°43′05″W), 1080 m a.s.l., 18 May 2010–on bark of living *S. conspicua*, leg. S.P.Gorjón coll. SPG 2831, 2832.

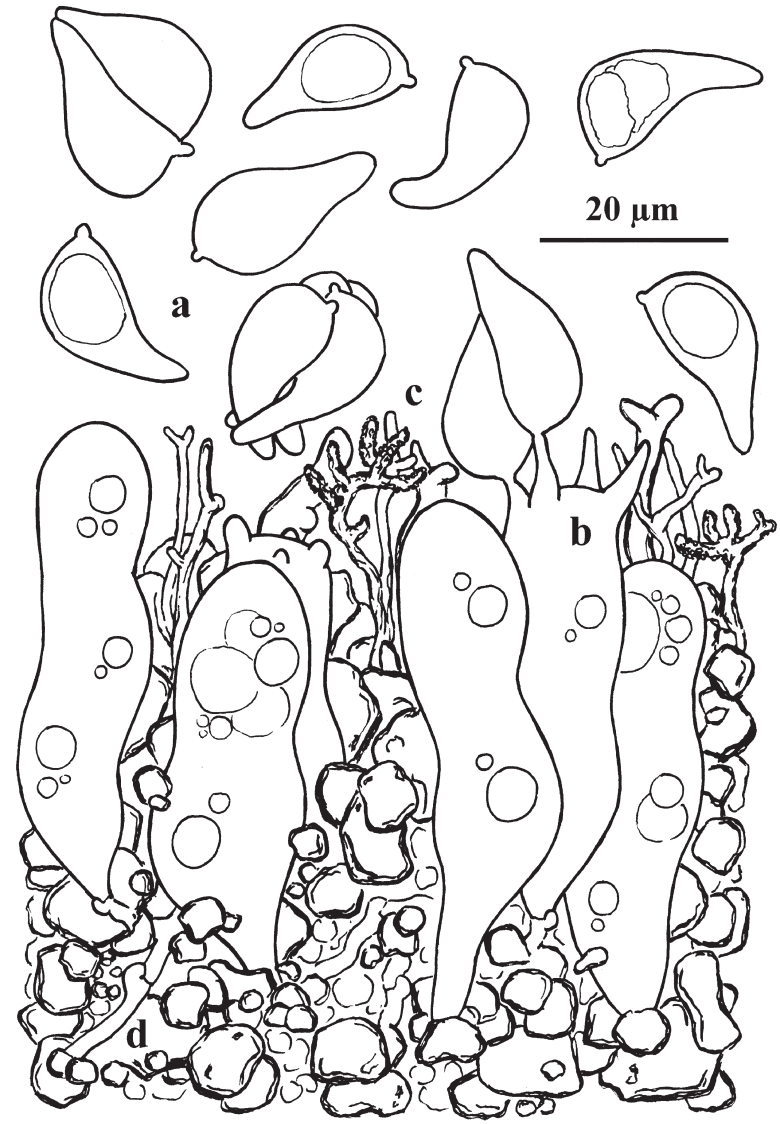


Plate 2. *Dendrothele latenavicularis*.
Hymenial elements a) basidiospores, b) basidium, c) dendrohyphidia, d) generative hyphae (coll. S.P. Gorjón 2963, holotype)

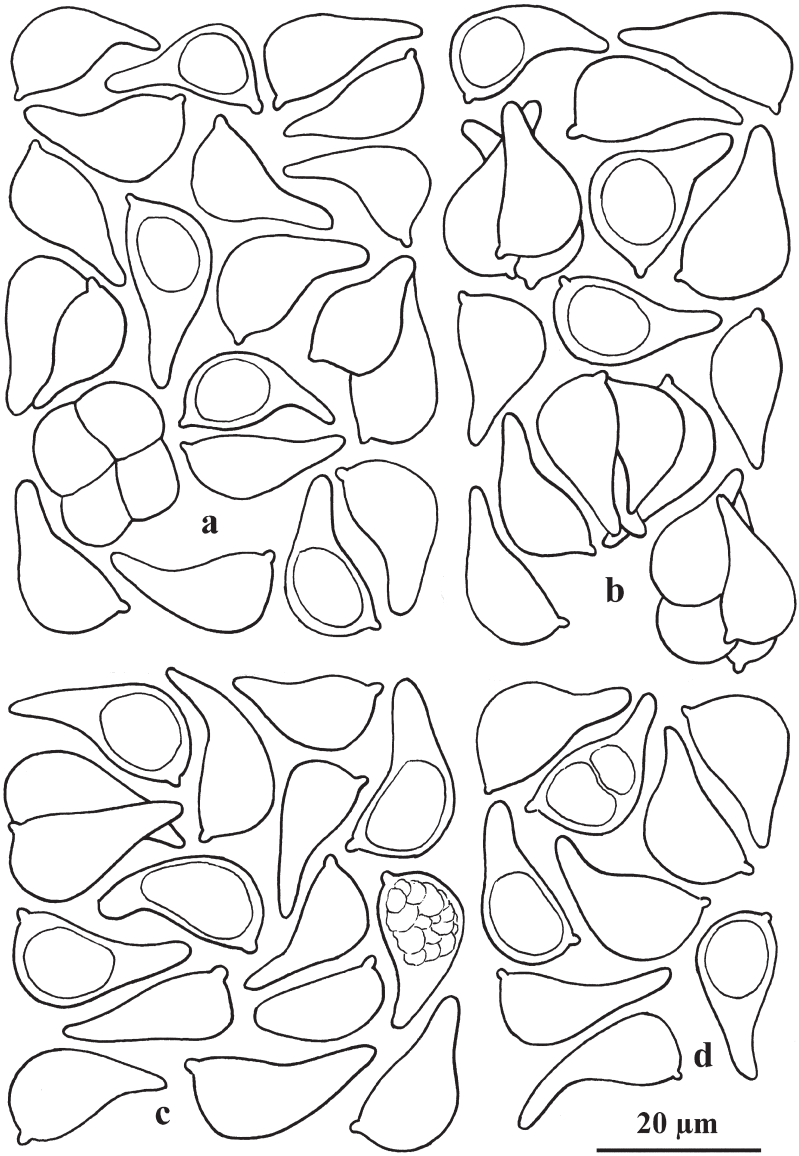


Plate 3. *Dendrothele latenavicularis*.
Basidiospores (coll. S.P. Gorjón a) 2962, b) 2920, c) 2915, d) 2918)

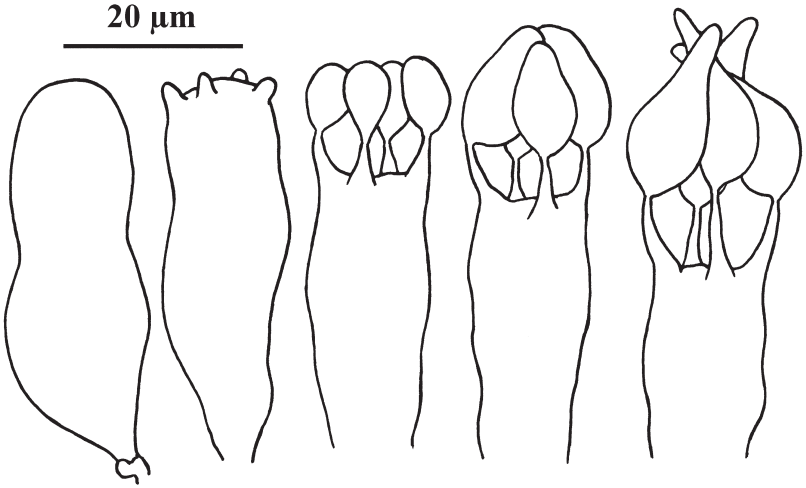


Plate 4. *Dendrothele latenavicularis*.
Basidiosporogenesis (coll. S.P. Gorjón 2963, holotype)

Comments — *Dendrothele latenavicularis* belongs to the group of *Dendrothele* species with navicular basidiospores, a spore feature recently described by Nakasone & Burdsall (2011) for three species from New Zealand. *Dendrothele navicularis* Nakasone & Burds. has irregularly subfusiform to navicular basidiospores, often medially constricted, sometimes curved, with a small, distinct apiculus, (11–)14–16(–19) × 5.5–7.2(–8) µm. In addition it has rare suburniform, pyriform, or narrowly clavate to cylindric cystidia. *Dendrothele magnenavicularis* Nakasone & Burds. produces long, narrowly navicular basidiospores (17.3–)18–22(–24) × (5.5–)6–7(–7.8) µm, with a distinct median constriction. *Dendrothele cymbiformis* Nakasone & Burds. is characterized by a hymenophore with hyphal pegs and narrowly navicular basidiospores, (11.5–)14–17.5 × 4–5(–6) µm.

Two *Dendrothele* species with arachiform basidiospores also appear to be morphologically closely related. *Dendrothele pitrae* Gresl. & Rajchenb. from Argentina, has cylindric, slightly or distinctly curved basidiospores with a median constriction, and distally obtuse or tapered, (11–)12–15(–16) × 5–5.5(–6) µm. *Dendrothele arachispora* Nakasone & Burds., from New Zealand, has ellipsoid basidiospores, (14–)16–18 × (6.5–)7.8–8.5(–9.5) µm, with a slight median constriction (peanut-shape).

*Dendrothele latenavicularis* differs from the species discussed above in its distinctly broader navicular basidiospores that lacks a median constriction and tapers to a narrow, vermiform distal end (Plate 3). Moreover, all these species

with navicular or arachiform basidiospores have different host preferences. Because no *Dendrothele* species with navicular or arachiform basidiospores is known from the Northern Hemisphere, it is likely that they have a common origin in the Southern Hemisphere. It would be very interesting to study these species from a molecular perspective, to determine their genetic relationships and phylogeographical patterns.

**Key to *Dendrothele* species with navicular and arachiform basidiospores**

1a. Basidiospores cylindric to ellipsoid with a distinct median constriction . . . . . .2
1b. Basidiospores navicular to fusiform . . . . . .3

2a. Basidiospores usually more than 6.5 µm wide . . . . . ***D. arachispora***
2b. Basidiospores narrow, usually up to 6 µm wide . . . . . ***D. pitrae***

3a. Basidiospores (8–)9–11 µm wide . . . . . ***D. latenavicularis***
3b. Basidiospores up to 6–7(–8) µm wide . . . . . .4

4a. Hymenophore with hyphal pegs, basidiospores up to 6 µm wide . . . ***D. cymbiformis***
4b. Hymenophore smooth, basidiospores 5.5–8 µm wide. . . . . .5

5a. Cystidia present, basidiospores 11–19 µm long . . . . . ***D. navicularis***
5b. Cystidia absent, basidiospores 17–24 µm long . . . . . ***D. magnenavicularis***

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